Final
Former Incinerators, Parcel 96(7)
Site-Specific Sampling Plan Addendum to the
QST Environmental, Inc. Final Site Investigation Work Plan

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
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Prepared by:

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Knoxville, Tennessee 37923

Delivery Order CK08
Contract No. DACA21-96-D-0018
IT Project No. 783149

September 1999

Revision 1

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List of Acronyms

ASTM	American Standard for Testing and Materials
BCT	BRAC Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
FTMC	Fort McClellan
IT	IT Corporation
PCB	polychlorinated biphenyl
PCDD/PCDF	polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans
PSSC	potential site-specific chemicals
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QST	QST Environmental Inc.
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

1.0 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the completion of the site investigation (SI) at the Former Incinerators, Parcel 96(7) under Delivery Order CK08, Contract No. DACA21-96-D-0018 (USACE, 1999). The SI for the Former Incinerators, Parcel 96(7) at FTMC was initiated by QST Environmental Inc. (QST). A draft SI report was submitted to the Base Realignment Closure (BRAC) Cleanup Team (BCT) in January 1999. Based on the results of the draft SI, the BCT requested that additional work be conducted. IT is conducting the additional work in order to complete the SI work initiated by QST. This addendum only addresses the additional work to be conducted by IT. The site description, samples collected, and the sample results for the SI work conducted by QST is presented in the QST Draft Site Investigation Report, January 1999.

This site-specific field sampling plan (SFSP) addendum to the QST Final Site Investigation Work Plan, March 1998, has been prepared to provide technical guidance to complete sample collection and analysis in support of the SI at the Former Incinerators, Parcel 96(7). This addendum will be used in conjunction with the site-specific safety and health plan (SSHP) attachment developed by IT Corporation (IT) for the QST Ground Scar and Boiler Plant sites under Task Order CK08.

Specifically, IT will collect one subsurface soil and four groundwater samples from at this site. These samples will be collected from well locations proposed in the original QST work plan, but were not installed due to field conditions. The well locations have been previously approved by the BCT. Chemical analyses of the samples collected during this field program will include volatile organic compounds, semivolatile organic compounds, and metals. The soil sample will be analyzed for polychlorinated biphenyls, polychlorinated dibenzo-p-dioxins, and polychlorinated dibenzofurans, in addition. Results from these analyses will be combined with those results previously collected by QST and compared with site-specific screening levels specified in the IT installation-wide work plan (WP) (IT, 1998b) and regulatory agency guidelines.

This SI addendum to the QST SI work plan for the Former Incinerators will be used in conjunction with the a site-specific safety and health plan (SSHP), the WP, and the installation-wide sampling and analysis plan (SAP) (IT, 1998a). The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.1 Site Description

The Former Incinerators, Parcel 96(7), has been described in Section 2.0 of the QST Final SI Work Plan, March 1998.

1.2 Scope of Work

The scope of work for activities associated with this addendum to the QST Final Site Investigation Work Plan, March 1998 at the Former Incinerators, Parcel 96(7), as specified by the statement of work (USACE, 1999), includes the following tasks:

- Develop the SFSP addendum attachment to the QST Site Investigation Work Plan.
- Develop the SSHP attachment.
- Collect one subsurface soil sample and four groundwater samples from four monitoring wells to be installed, complete the investigation as to whether potential site-specific chemicals (PSSC) are present at the Former Incinerators, Parcel 96(7) site and provide data useful for supporting any future planned corrective measures and closure activities.
- Samples will be analyzed for the parameters that will include volatile organic compounds, semivolatile organic compounds, and metals. The soil sample will be analyzed for polychlorinated biphenyls, polychlorinated dibenzo-p-dioxins, and polychlorinated dibenzofurans in addition.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site using both the data collected by QST and IT, and to recommend further actions, if appropriate.

2.0 Field Activities

2.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

2.2 Environmental Sampling

The environmental sampling program at the Former Incinerators site includes the collection of groundwater samples for chemical analyses. These samples will be collected and analyzed to provide additional data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

2.3 Subsurface Soil Sampling

One subsurface soil sample will be collected at the Former Incinerators site.

2.3.1 Sample Locations and Rationale

The subsurface soil sample will be collected from the soil boring completed to install the permanent residuum monitoring well at location GSBP-96-MW04 proposed on Figure 2-1. This soil sample listed in Table 2-1 will be analyzed for polychlorinated dibenzo-p-dioxins, and polychlorinated dibenzofurans in addition to the list of analyses for the groundwater samples.

2.3.2 Sample Collection

The subsurface soil sample will be collected from the soil boring at a depth from 1 foot to 3 feet below the ground surface. The soil boring will be advanced and the soil sample collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The sample will be analyzed for the parameters listed in Table 2-1 of this addendum.

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STARTING DATE: 06/21/99 | DRAWN BY: D. BILLINGSLEY
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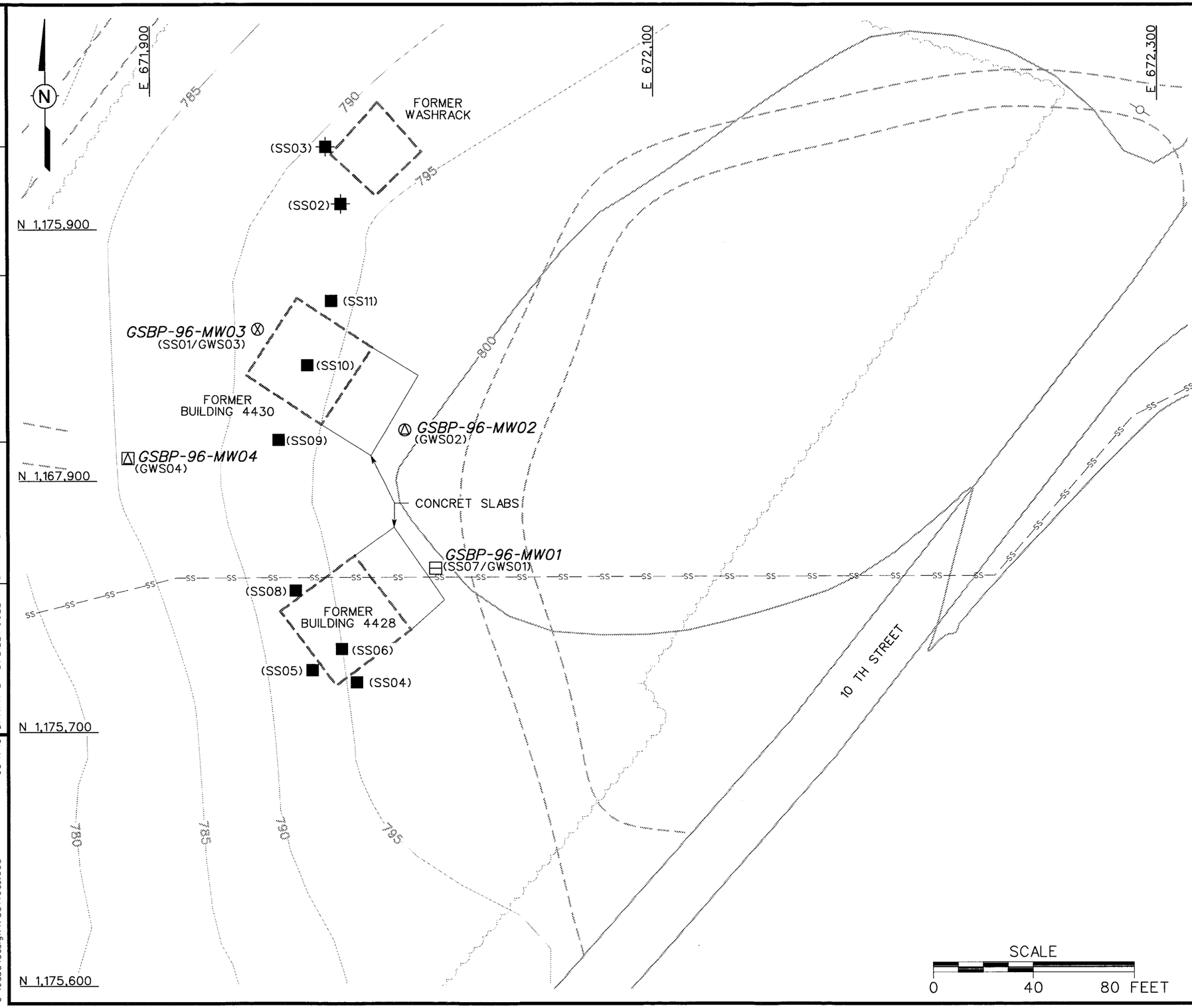

LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- REMOVED BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- UTILITY POLE
- -- SS -- SANITARY SEWER LINE
- EXISTING SURFACE SOIL SAMPLE LOCATION
- EXISTING SUBSURFACE SOIL SAMPLE LOCATION
- PROPOSED GROUNDWATER AT QST GROUNDWATER SAMPLE LOCATION
- PROPOSED GROUNDWATER AT QST GROUNDWATER AND SUBSURFACE SOIL LOCATION
- PROPOSED GROUNDWATER AT QST GROUNDWATER AND SURFACE SOIL LOCATION
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE AT QST GROUNDWATER LOCATION
- (GWS01) SAMPLE LOCATIONS DESIGNATED IN THE QST ENVIRONMENTAL INC., FINAL SITE INVESTIGATION WORK PLAN, MARCH 1999

SCALE
0 40 80 FEET

FIGURE 2-1
PROPOSED SAMPLE LOCATIONS FORMER INCINERATORS PARCEL 96(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
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Table 2-1

Groundwater Sample Designations and QA/QC Sample Quantities
Former Incinerators, Parcel 96(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	QST Sample Locations	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
					Field Duplicates	Field Splits	MS/MSD	
GSBP-96-MW04	GWS04	GSBP-96-MW04-DS-BY0001-REG	Soil	1-3	GSBP-96-MW04-DS-BY0002-FD	GSBP-96-MW04-DS-BY0003-FS	GSBP-96-MW04-DS-BY0001-MS GSBP-96-MW04-DS-BY0001-MSD	TCL VOCs, TCL SVOCs, TAL Metals, PCBs, PCDD/PCDF
GSBP-96-MW01	GWS01	GSBP-96-MW01-GW-BY3001-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, PCBs
GSBP-96-MW02	GWS02	GSBP-96-MW02-GW-BY3002-REG	Groundwater	a			GSBP-96-MW02-GW-BY3004-MS GSBP-96-MW02-GW-BY3004-MSD	TCL VOCs, TCL SVOCs, TAL Metals, PCBs
GSBP-96-MW03	GWS03	GSBP-96-MW03-GW-BY3003-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, PCBs
GSBP-96-MW04	GWS04	GSBP-96-MW04-GW-BY3004-REG	Groundwater	a	GSBP-96-MW04-GW-BY3005-FD	GSBP-96-MW04-GW-BY3006-FS		TCL VOCs, TCL SVOCs, TAL Metals, PCBs

[a]Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
REG - Field sample.
QA/QC - Quality assurance/quality control.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
PCB - Polychlorinated biphenyl.
PCDD/PCDF - Polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans

2.4 Permanent Residuum Monitoring Wells

Four permanent residuum monitoring wells will be installed at the Former Incinerators site. The permanent residuum monitoring well locations are shown on Figure 2-1. The monitoring well boreholes will be drilled to the top of bedrock using a truck-mounted hollow-stem auger drill rig. Depth to bedrock is approximately 20 below ground surface (bgs) to 50 feet bgs at the site. The monitoring well casing will consist of new 2-inch inside-diameter, Schedule 40, threaded, flush-joint, PVC pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap PVC well screen, approximately 10 feet long.

Soil samples for lithology will be collected continuously every 5 feet to the total depth of the hole during hollow-stem auger drilling to provide a detailed lithologic log. The samples will be collected for lithology using a 24-inch-long, 2-inch-or-larger-diameter, split-spoon sampler. The soil borings will be logged in accordance with American Standard for Testing and Materials (ASTM) Method D 2488 using the Unified Soil Classification System. The soil samples will be screened in the field using a PID. The permanent residuum monitoring wells will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 1998a). The exact monitoring well locations will be determined in the field by the on-site geologist, based on actual field conditions.

2.5 Groundwater Sampling

Four groundwater samples will be collected from the four monitoring wells completed at the Former Incinerators are presented in Section 2.4.

2.5.1 Sample Locations and Rationale

Groundwater samples will be collected from the monitoring well locations shown on Figure 2-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 2-1.

2.5.2 Sample Collection

Prior to sampling monitoring wells, static water levels will be measured from each of the four monitoring wells installed at the site to define the groundwater flow in the residuum aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP (IT, 1998a). Groundwater samples will be collected in accordance with the procedures outlined in Section 4.9.1.4 of the SAP.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this addendum are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Table 2-2 of this addendum.

3.0 References

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August

U.S. Army Corps of Engineers (USACE), 1999, ***Statement of Work for Task Order CK08, Underground Storage Tank (UST) Closure Assessments, Ground Scars/Boiler Plants Site Investigations at Fort McClellan, Alabama,*** April.

Table 2-2

Analytical Samples
Site Investigation
Former Incinerators, Parcel 96(7)
Fort McClellan, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples: No. of Sample Points	Field Samples: No. of Events	Field Samples: No. of Field Samples	QA/QC Samples[a]: Field Dups (10%)	QA/QC Samples[a]: Splits w/ QA Lab (5%)	QA/QC Samples[a]: MS/MSD (5%)	QA/QC Samples[a]: Trip Blank (1/ship)	QA/QC Samples[a]: Eq. Rinse (1/wk/matrix)	Quanterra Total No. Analysis	QA Lab Total No. Analysis
Former Incinerators - Parcel 96(7): 4 water matrix samples (4 groundwater samples); 1 soil matrix sample (1 subsurface soil samples)													
TCL VOCs	8260B	water	normal	4	1	4	1	1	1	1	1	9	1
TCL SVOCs	8270C	water	normal	4	1	4	1	1	1		1	8	1
Tot TAL Metals	6010B/7000	water	normal	4	1	4	1	1	1		1	8	1
PCBs	8082	water	normal	4	1	4	1	1	1		1	8	1
TCL VOCs	8260B	soil	normal	1	1	1	1	1	1	1	1	6	1
TCL SVOCs	8270C	soil	normal	1	1	1	1	1	1		1	5	1
TAL Metals	6010B/7000	soil	normal	1	1	1	1	1	1		1	5	1
PCBs	8082	soil	normal	1	1	1	1	1	1		1	5	1
2,3,7,8 Isomers and Totals (by class) PCDD/PCDF	8290	soil	normal	1	1	1	1	1	1		1	5	1
Former Incinerators Subtotals:				21	9	9	9	2	9	59	9		

[a]Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

U.S. Army Engineer District, Savannah
Environmental & Materials District
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Tel: 678-354-0310

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
PCB - Polychlorinated biphenyls.
Pest - Pesticides.
Cl - Chlorinated.
OP - Organophosphorus.
TOC - Total organic carbon.
PCDD/PCDF - Polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans

Final
Ground Scar South of Building 3134, Parcel 153(7) Site-Specific Field Sampling Plan Addendum to the QST Environmental, Inc. Final Site Investigation Work Plan

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602

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312 Directors Drive
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List of Acronyms

ASTM	American Standard for Testing and Materials
BCT	BRAC Closure Team
bgs	below ground surface
BRAC	Base Realignment and Closure
FTMC	Fort McClellan
IT	IT Corporation
PSSC	potential site-specific chemicals
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QST	QST Environmental Inc.
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

1.0 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the completion of the site investigation (SI) of the Ground Scar South of Building 3134, Parcel 153(7) under Delivery Order CK08, Contract No. DACA21-96-D-0018 (USACE, 1999). The SI for the Ground Scar South of Building 3134, Parcel 153(7) at FTMC was initiated by QST Environmental Inc. (QST). A draft SI report was submitted to the Base Realignment and Closure (BRAC) Cleanup Team (BCT) in January 1999. Based on the results of the draft SI, the BCT requested that additional work be conducted. IT is conducting the additional work in order to complete the SI work initiated by QST. This addendum only addresses the additional work to be completed by IT. The site description, samples collected and sample results for the SI work conducted by QST is presented in the QST Draft Site Investigation Report, January 1999.

This site-specific field sampling plan (SFSP) addendum to the QST Final Site Investigation Work Plan, March 1998, has been prepared to provide technical guidance to complete sample collection and analysis in support of the SI at the Ground Scar South of Building 3134, Parcel 153(7). This addendum will be used in conjunction with the site-specific safety and health plan (SSHP) attachment developed by IT Corporation (IT) for the QST Ground Scar and Boiler Plant Sites under Task Order CK08.

Specifically, IT will collect one surface soil sample, one subsurface soil sample, one groundwater sample, one surface water sample and one sediment sample from at this site. Chemical analyses of the samples collected during this field program will include volatile organic compounds, semivolatile organic compounds, metals, and nitroexplosives. In addition, the sediment sample will be analyzed for total organic carbon and grain size. Results from these analyses will be combined with those results previously collected by QST and compared with site-specific screening levels specified in the IT installation-wide work plan (WP) (IT, 1998b) and regulatory agency guidelines.

This SI addendum to the QST SI work plan for the Ground Scar South of Building 3134 will be used in conjunction with the a site-specific safety and health plan (SSHP), the WP, and the

installation-wide sampling and analysis plan (SAP) (IT, 1998a). The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.1 Site Description

The Ground Scar South of Building 3134, Parcel 153(7), has been described in Section 2.0 of the QST Final SI Work Plan, March 1998.

1.2 Scope of Work

The scope of work for activities associated with this addendum to the QST Final Site Investigation Work Plan, March 1998 at the Ground Scar South of Building 3134, Parcel 153(7), as specified by the statement of work (USACE, 1999), includes the following tasks:

- Develop the SFSP addendum attachment to the QST Site Investigation Work Plan.
- Develop the SSHP attachment for the QST Ground Scars and Boiler Plant Sites.
- Collect one surface soil sample, one subsurface soil sample, one groundwater sample, one surface water sample and one sediment sample, complete the investigation as to whether potential site-specific chemicals (PSSC) are present at the Ground Scar South of Building 3134, Parcel 153(7) site and provide data useful for supporting any future planned corrective measures and closure activities.
- Samples will be analyzed for volatile organic compounds, semivolatile organic compounds, metals, nitroexplosives, TOC, and grain size.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site using both the data collected by QST and IT, and to recommend further actions, if appropriate.

2.0 Field Activities

2.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate

with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

2.2 Environmental Sampling

The environmental sampling program at the Ground Scar South of Building 3134 includes the collection of soil, groundwater, surface water and sediment samples for chemical analyses. These samples will be collected and analyzed to provide additional data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

2.3 Surface Soil Sampling

One surface soil sample will be collected at the Ground Scar South of Building 3134 site.

2.3.1 Sample Locations

The proposed sampling location is shown in Figure 2-1. The surface soil sample designation and required QA/QC sample requirements are summarized in Table 2-1. The final soil boring sampling location will be determined in the field by the on-site geologist based on actual field conditions.

2.3.2 Sample Collection

The surface soil sample will be collected from the upper 1 foot of soil by direct-push methodology as specified in Section 4.7.1.1 of the SAP (IT, 1998a). The collected soil sample will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. The surface soil sample will be screened for information purposes only, and not to select the sample for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Table 2-2 of this addendum.

2.4 Subsurface Soil Sampling

One subsurface soil sample will be collected from the one soil boring installed at the Ground Scar South of Building 3134 site.

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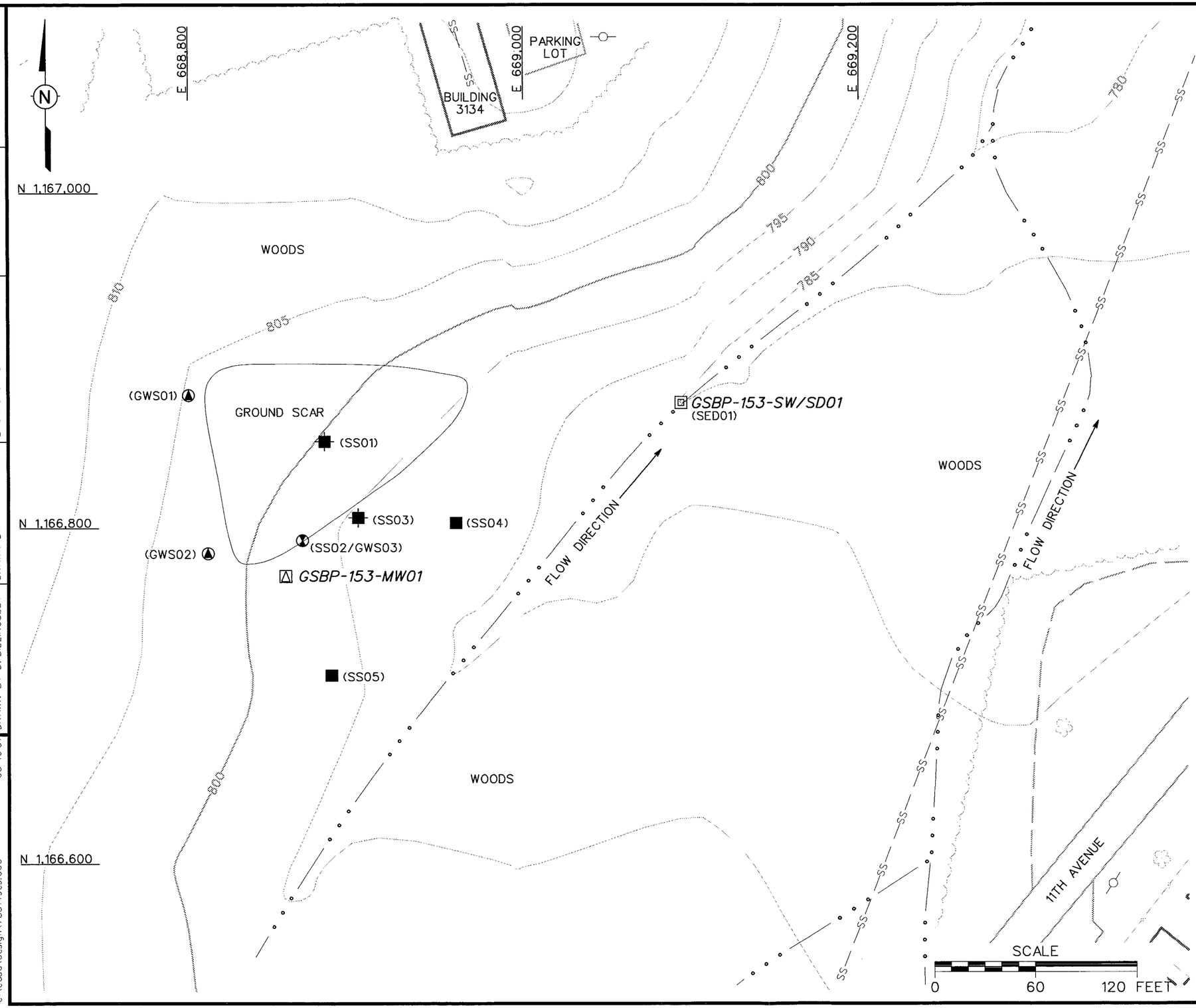
STARTING DATE: 06/23/99	DRAFT. CHCK. BY:
DRAWN BY: D. BILLINGSLEY	ENGR. CHCK. BY: J. RAGSDALE
DATE LAST REV.:	INITIATOR: J. RAGSDALE
DRAWN BY:	PROJ. MGR.: J. YACOUB
	PROJ. NO.: 783149
	DWG. NO.: ...\783149es.066



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- SURFACE DRAINAGE / CREEK
- UTILITY POLE
- SANITARY SEWER LINE
- EXISTING SURFACE SOIL SAMPLE LOCATION
- EXISTING SUBSURFACE SOIL SAMPLE LOCAITON
- EXISTING GROUNDWATER SAMPLE LOCATION
- EXISTING GROUNDWATER AND SUBSURFACE SOIL SAMPLE LOCATION
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
- PROPOSED SEDIMENT AT QST SURFACE SAMPLE LOCATION
- (GWS02) SAMPLE LOCATIONS DESIGNATED IN THE QST ENVIRONMENTAL INC., FINAL SITE INVESTIGATION WORK PLAN, MARCH 1999

FIGURE 2-1
PROPOSED SAMPLE LOCATIONS GROUND SCAR SOUTH OF BUILDING 3134 PARCEL 153(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

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Table 2-1

Surface Soil, Subsurface Soil, Groundwater, Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Ground Scar South of Building 3134, Parcel 153(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Type	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
GSBP-153-MW01	soil	GSBP-153-MW01-SS-BZ0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	soil	GSBP-153-MW01-DS-BZ0002-REG	a	GSBP-153-MW01-DS-BZ0003-FD	GSBP-153-MW01-DS-BZ0004-FD		
GSBP-153-MW01	groundwater	GSBP-153-MW01-GW-BZ3001-REG	b	GSBP-153-MW01-GW-BZ3002-FD	GSBP-153-MW01-GW-BZ3003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
GSBP-153-SW/SD01	surface water	GSBP-153-SW/SD01-SW-BZ2001-REG	N/A			GSBP-153-SW/SD01-SW-BZ2001-MS GSBP-153-SW/SD01-SW-BZ2001-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
GSBP-153-SW/SD01	sediment	GSBP-153-SW/SD01-SD-BZ1001-REG	0-.5			GSBP-153-SW/SD01-SD-BZ1001-MS GSBP-153-SW/SD01-SD-BZ1001-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives, TOC, Grain Size

[a] Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.
[b] Sample depth will depend on where sufficient first water is encountered to collect a water sample.

QA/QC - Quality assurance/quality control.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
N/A - Not applicable.

REG - Field sample.
FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.

Table 2-2

Analytical Samples
Site Investigation
Ground Scar South of Building 3134, Parcel 153(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples: No. of Sample Points	Field Samples: No. of Events	Field Samples: No. of Field Samples	QA/QC Samples [a]: Field Dups (10%)	QA/QC Samples [a]: Splits w/ QA Lab (5%)	QA/QC Samples [a]: MS/MSD (5%)	QA/QC Samples [a]: Trip Blank (1/ship)	QA/QC Samples [a]: Eq. Rinse (1/wk/matrix)	Quanterra Total No. Analysis	QA Lab Total No. Analysis
Ground Scar South of Building 3134: 2 water matrix samples (1 groundwater and 1 surface water); **3 soil matrix samples** (1 surface soil , 1 subsurface soil, and 1 sediment)													
TCL VOCs	8260B	water	normal	2	1	2	1	1	1	1	1	7	1
TCL SVOCs	8270C	water	normal	2	1	2	1	1	1		1	6	1
Tot TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1		1	6	1
Nitroexplosives	8330	water	normal	2	1	2	1	1	1		1	6	1
TCL VOCs	8260B	soil	normal	3	1	3	1	1	1		1	7	1
TCL SVOCs	8270C	soil	normal	3	1	3	1	1	1		1	7	1
TAL Metals	6010B/7000	soil	normal	3	1	3	1	1	1		1	7	1
Nitroexplosives	8330	soil	normal	3	1	3	1	1	1		1	7	1
TOC	9060	sediment	normal	1	1	1						1	0
Grain Size	ASTM D-421/D-422	sediment	normal	1	1	1						1	0
Ground Scar South of Building 3134 Subtotal:				22			8	8	8	1	8	55	8

[a] Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

U.S. Army Engineer District, Savannah
Environmental & Materials District
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Tel: 678-354-0310

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.

TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.

2.4.1 Sample Locations

The subsurface soil sample will be collected from the soil borings proposed on Figure 2-1. The subsurface soil sample to be collected is listed in Table 2-1. The final soil boring sampling location will be determined in the field by the on-site geologist, based on actual field observations and utility clearance results.

2.4.2 Sample Collection

The subsurface soil sample will be collected from a soil boring at a depth greater than 1 foot bgs in the unsaturated zone. The soil boring will be advanced and soil sample collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithogical log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil sample will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background (readings in ambient air). Typically, the subsurface soil sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples indicate readings exceeding background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. The subsurface soil sample will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Table 2-2 of this addendum.

2.5 Permanent Residuum Monitoring Wells

One permanent residuum monitoring well will be installed at the Ground Scar South of Building 3134 site. The permanent residuum monitoring well location is shown on Figure 2-1. The monitoring well borehole will be drilled to the top of bedrock or first water using a truck-

mounted hollow-stem auger drill rig. Depth to bedrock is approximately 20 below ground surface (bgs) to 50 feet bgs at the site. The monitoring well casing will consist of new 2-inch inside-diameter, Schedule 40, threaded, flush-joint, PVC pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap PVC well screen, approximately 10 feet long.

Soil samples for lithology will be collected continuously every 5 feet to the total depth of the hole during hollow-stem auger drilling to provide a detailed lithologic log. The samples will be collected for lithology using a 24-inch-long, 2-inch-or-larger-diameter, split-spoon sampler. The soil borings will be logged in accordance with American Standard for Testing and Materials (ASTM) Method D 2488 using the Unified Soil Classification System. The soil samples will be screened in the field using a PID. The permanent residuum monitoring well will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 1998a). The exact monitoring well location will be determined in the field by the on-site geologist, based on actual field conditions.

2.6 Groundwater Sampling

One groundwater sample will be collected from the monitoring well completed at the Ground Scar South of Building 3134 presented in Section 2.5.

2.6.1 Sample Locations

The groundwater sample will be collected from the monitoring well location shown on Figure 2-1. The groundwater sample designation, depth, and required QA/QC sample quantities are listed in Table 2-1.

2.6.2 Sample Collection

Prior to sampling the monitoring well, static water levels will be measured from the monitoring well installed at the site to define the groundwater flow in the residuum aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP (IT, 1998a). The groundwater sample will be collected in accordance with the procedures outlined in Section 4.9.1.4 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this addendum are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Table 2-2 of this addendum.

2.7 Surface Water Sampling

One surface water sample will be collected from the intermittent stream that flows along the east edge of the Ground Scar South of Building 3134 site.

2.7.1 Sample Locations

The surface water sample will be collected from the proposed location on Figure 2-1. The surface water sample designation and required QA/QC sample requirements are listed in Table 2-2. The exact sampling location will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

2.7.2 Sample Collection

The surface water sample will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The sample will be analyzed for the parameters listed in Table 2-2 of this addendum.

2.8 Sediment Sampling

One sediment sample will be collected from the Ground Scar South of Building 3134 . The sediment sample will be collected at the same location as the surface water sample described in Section 2.6.

2.8.1 Sample Locations

The proposed location for the sediment sample is shown in Figure 2-1. The sediment sample designation and required QA/QC sample requirements are listed in Table 2-1. The actual sediment sample point will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

2.8.2 Sample Collection

The sediment sample will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment sample will be analyzed for the parameters listed in Table 2-2 of this addendum.

3.0 References

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August

U.S. Army Corps of Engineers (USACE), 1999, ***Statement of Work for Task Order CK08, Underground Storage Tank (UST) Closure Assessments, Ground Scars/Boiler Plants Site Investigations at Fort McClellan, Alabama,*** April.